Seattle City Light CIP White Paper

Department Name: Seattle City Light

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Section 1 - Overview

Seattle City Light (City Light) is a municipal electric utility, owned by the residents of Seattle and run by the City's elected officials. The Utility serves a population of almost 700,000 people living in a 130 square-mile area, which includes the City of Seattle and several adjoining jurisdictions. To serve these customers, City Light owns, maintains, and operates a multi-billion-dollar physical plant. The physical plant includes:

- A power supply generation system consisting of seven hydroelectric plants on the Pend Oreille (Boundary Dam), Skagit, Cedar, and Tolt Rivers with a combined capacity of almost 2,000 megawatts;
- 650 miles of high-voltage transmission lines linking these plants to Seattle;
- A distribution system with 14 major substations and more than 2,500 miles of overhead and underground cable;
- A state-of-the-art System Control Center coordinating these activities; and
- Billing and metering equipment tracking approximately 395,000 accounts.

City Light's Capital Improvement Program (CIP) is the vehicle for maintaining, upgrading, and expanding this infrastructure. The CIP also funds a variety of safety improvements, mitigation activities, and licensing requirements. The CIP's overriding goal is to ensure that the facilities required to serve City Light customers with low-cost, reliable power, are in place when and where the power is requested. Funding for the CIP comes primarily from retail electricity sales, sales of surplus power on the wholesale market, and the sale of revenue bonds.

In 2009 and 2010, City Light received significantly less net wholesale revenue than anticipated due to lower precipitation levels and falling energy prices for the Utility's surplus power. This revenue shortfall required City Light to reduce spending on planned maintenance and capital improvement projects. In response to the revenue shortfall, City Council and the Mayor undertook a series of actions to help strengthen oversight and the financial management of the Utility. The Rate Stabilization Account was created to protect against future fluctuations in the wholesale market, the City Light Review Panel was established to advise elected officials on rate and Utility issues, and City Light was directed to develop a Strategic Plan with input from the Review Panel and the public.

The Strategic Plan will be submitted for City Council approval in early 2012, and will establish spending priorities and a six-year rate path for the Utility. Once approved, the Strategic Plan will be used to guide development of City Light's budget and CIP in future years.

Section 2 - Summary of Upcoming Budget Issues and Challenges

In developing the Strategic Plan, the Utility has identified baseline capital expenditures and developed strategic initiatives for replacing aging infrastructure, automating electrical system control, and leveraging new technology to meet the expectations of City Light customers. Additional issues include regional transmission congestion and regulatory requirements to improve the security and reliability of the transmission grid. A list of Strategic Plan initiatives is provided in Section 6.

Recent investments in Utility systems will help identify and evaluate future capital proposals. The Outage Management System (OMS) began operation in 2010, and the Work and Asset Management System (WAMS) went live for distribution operations and engineering groups in 2011. OMS allows the Utility to evaluate the reliability of specific portions of the distribution system and identify necessary improvements. WAMS provides the platform for tracking City Light's estimated 900,000 assets, as well as generating the associated work orders and maintenance records of the Utility. WAMS will be extended to cover substation operations and power supply assets in 2012 and 2013.

Tracking this information will allow the Utility to identify operational efficiencies by identifying high maintenance cost assets and equipment prone to repetitive failure. This data will be used to develop strategic management plans for each asset type and will inform operational practices and capital replacement decisions. Through the asset management program, the Utility has already conducted condition assessments on 115,000 poles, 88 transmission towers, and 7 power transformers and made adjustments to the CIP based on the results. In addition, the Utility is preparing a Transmission & Distribution Outlook report for early 2012. This report will contain more detail on the 'wires' assets and will be available to guide the 2013-14 biennial budget process.

Section 3 - Thematic Priorities

Projects included in the CIP meet a variety of thematic needs:

- **Maintain existing infrastructure and support basic operations** – The majority of City Light's CIP projects provide for the maintenance and upkeep of existing systems and equipment, and support the on-going daily operations of the Utility. These projects include major maintenance work to extend the life and function of facilities and equipment, scheduled replacement of old and failing equipment, and capital programs to support customer connections and repair unexpected system outages. Projects are also included in the CIP to respond to external conditions, such as relocations due to major transportation projects.

- **Upgrade capacity and services to provide new functionality** – Projects proposed in the CIP may also seek to increase the Utility's generation or distribution capacity, or provide new functionality for the management and customer service systems of the Utility. These projects strive to change the way the Utility operates and delivers service. While the 2012-2017 CIP includes funding for some such projects currently being implemented (such as the Work and Asset Management System), spending for several other capacity projects (such as the Gorge Second Tunnel, North Downtown Substation, and Automated Metering Infrastructure) have been reduced or removed from the CIP for reconsideration as Strategic Plan initiatives. Funding for these projects or other strategic investments may be included in the future, based on the direction of the approved Strategic Plan.

- **Address licensing, regulatory and safety requirements** – Federal licenses governing the operation of the Utility's dams require a number of environmental, historic preservation, and recreation mitigation measures. In addition, federal requirements regulating the transmission grid and energy market transactions require system upgrades and improvements. The CIP also includes projects to improve safety and proactively reduce risk to the Utility's infrastructure.

- **Maintain the Utility's information technology systems** – Over the last several decades, the electric utility industry has come to rely heavily on information technology systems to provide real time management and automation of operations, design and digitally record utility systems and assets, regulate power across the regional transmission grid, manage financial transactions on the energy market, and increase business efficiencies throughout the organization. The CIP includes projects to maintain the hardware and software necessary to provide these functions.

Section 4 - Project Selection Criteria

Project ideas are generated from staff throughout the organization and are developed into proposals by the operational divisions of the Utility. Each of the Utility's organizational lines of business (power supply, transmission and distribution, customer service) prioritizes proposed capital spending within their divisions and submits recommended projects to a centralized capital budgeting system.

City Light management compares proposals against criteria that evaluate the projects' costs, benefits and risks. The Utility gives priority to mandatory requirements and projects currently underway, before considering scheduled future projects and new initiatives. Business cases are developed and revised to document the projects' expectations and rationale, and include a cost benefit analysis of alternatives, including the do nothing scenario.

The Utility's CIP is constrained by the availability of funding and labor resources to devote to capital projects. City Light management seeks to balance the overall needs of the Utility within these constraints and may rescope, reschedule, or defer projects to prepare a comprehensive six-year CIP. The Strategic Planning process provides a venue for vetting major capital spending decisions with elected officials and the public. City Light intends to revisit the Strategic Plan every two years to maintain transparency and set direction for future CIP development.

Section 5 - Aligning Infrastructure with Planned Growth

City Light carefully monitors load and reliability and recommends capital investments to assure that customers have access to reliable electrical power when they need it.

City Light has a limited ability to identify CIP project work by Urban Centers and Urban Villages. Many projects are ongoing and are not differentiated by specific sites in the budget. Unless significant area redevelopment (e.g., twice the electrical demand for the entire area) occurs, the existing electrical system is adequate to serve new customer's load. In the majority of cases, work proposed in the budget is based upon a history of customer requests or proposed to address reliability issues in an area.

Enhancements to geographic reporting are planned in concert with development of an integrated GIS System (a Strategic Plan Initiative). The current implementation of the Work and Asset Management system will allow employees to search by an address for a specific location or by 'area' -- this is a grid overlay that will assist in the identification of work.

City Light has been involved in the overall City effort to support the development in Urban Centers and Villages, including the current Comprehensive Plan update and the Neighborhood Planning process. The future growth information in the UCUV Growth Report and Urban Village table is useful for modeling in the distribution software. Area load forecasts being completed in 2011 will identify appropriate actions based on the timing of the planned development. CIP projects being proposed in the Strategic Plan that support urban village development include the North Downtown Spot Networks and North Downtown Substation projects.

Section 6 - Future Projects/What is on the Horizon

A new Strategic Plan is under development. CIP initiatives in the Strategic Plan that are not in the Proposed 2012-2017 CIP include:

- Customer Focused Web Redevelopment
- Planning, Design and Construction of New Streetlight Infrastructure
- Advanced Metering Infrastructure (includes Meter Data Mgmt System)
- Distribution Management System
- North Downtown Substation construction (or new feeders/transmission)

- Transmission system improvements (due to congestion in Puget Sound area)
- Programmatic reporting/BI system (continued development)
- Passport system upgrade
- Summit upgrade
- Cyber security upgrade
- Unified Geographic Information System
- Escalate Underground Cable Replacement
- Mobile Workforce (supplementary to existing budget)
- PCB and Spill Abatement (transformer replacements and construction of spill containment)
- NERC compliance tracking/reporting system
- Enterprise Document Management
- Construct the Gorge Auxiliary Tunnel
- Information Technology Strategic Planning and Disaster Recovery

In addition to these specific initiatives, the Strategic Plan includes a general initiative to seek efficiencies and reduce the CIP's overall level.

Section 7 - CIP Revenue Sources

Funding for City Light's CIP comes from cash from operations and debt. Cash from operations comes primarily from retail electricity sales and surplus energy sales on the wholesale market. A minor amount of additional revenue come from direct customer billing (including service connections and other customer requested work) and assorted fees, grants and transactions. City Light's policy is to limit debt financing to no more than 60% of the CIP (Resolution 31187).

Section 8 - CIP Spending by Major Category

Beginning in 2011, the Utility has provided additional summary information to break down the CIP by category in response to Council's desire to provide more documentation and transparency of capital expenditure decisions. The 2012-2017 Proposed CIP summarizes spending in the following categories:

Power Supply: Projects in this category include improvements to City Light's dams, generators, powerhouses, and other related projects. Projects to comply with federal licensing and environmental mitigation requirements at City Light's dams are also included in this category. City Light sequences work on major power production equipment (i.e., generator rebuilds and runner replacements) to reduce the impact to power generation and level capital spending.

Transmission: Projects in this category include transmission capacity and reliability projects to deliver power from City Light's dams to City Light's distribution system and connections to the regional power grid. City Light owns and maintains 650 miles of transmission capacity that connect the Skagit Facilities to Seattle. City Light leases additional transmission capacity to connect to the Boundary, Cedar Falls, and Tolt Facilities.

Distribution: Projects in this category include improvements to City Light's distribution substations, relays, feeders, network distribution systems, overhead and underground radial distribution systems, service connections, customer meters, and other projects related to the distribution system.

External Projects: Projects in this category respond to requests from local jurisdictions to relocate distribution services from overhead to underground systems per the terms of franchise agreements, maintain and upgrade the streetlight system, relocate utility infrastructure in response to major transportation projects, and provide capital improvements in response to other customer-requested service needs.

Central Utility Projects: Projects in this category provide for centralized billing and customer service systems, financial and information technology systems that are critical to the Utility's operation, and vehicle fleets and facilities that are not part of the power generating plant (e.g., equipment shops, service centers, maintenance yards).

2011-2017 Proposed CIP
Summary of CIP Project Allocations (in $1,000s)

	2012	2013	2014	2015	2016	2017	Total
Power Supply	**44,210**	**67,579**	**50,143**	**47,265**	**55,691**	**54,813**	**319,701**
Boundary	*21,525*	*40,406*	*25,619*	*21,039*	*26,683*	*25,645*	*160,917*
Skagit	*17,182*	*18,303*	*20,257*	*21,365*	*23,760*	*24,117*	*124,984*
Cedar Falls - Tolt	*2,894*	*6,216*	*1,406*	*2,453*	*2,790*	*2,843*	*18,602*
Other	*2,609*	*2,654*	*2,861*	*2,408*	*2,458*	*2,208*	*15,198*
Transmission	**2,779**	**2,912**	**2,973**	**3,037**	**3,104**	**3,177**	**17,982**
Distribution	**128,893**	**129,891**	**127,296**	**133,625**	**133,195**	**129,358**	**782,258**
Substations	*19,851*	*28,573*	*23,774*	*30,042*	*27,669*	*24,380*	*154,289*
Network	*12,835*	*14,005*	*13,674*	*15,957*	*16,311*	*16,710*	*89,492*
Radial	*44,825*	*38,767*	*44,713*	*41,968*	*43,308*	*42,026*	*255,607*
Service Connections	*34,930*	*39,200*	*39,097*	*39,933*	*40,775*	*41,657*	*235,592*
Other	*16,452*	*9,346*	*6,038*	*5,725*	*5,132*	*4,585*	*47,278*
External Projects	**65,025**	**44,395**	**40,575**	**38,564**	**18,452**	**33,410**	**240,421**
Local Jurisdictions	*14,975*	*15,059*	*10,699*	*10,901*	*5,017*	*5,129*	*61,780*
Transportation Relocations	*48,260*	*29,300*	*29,839*	*27,625*	*13,369*	*28,213*	*176,606*
Other	*1,790*	*36*	*37*	*38*	*66*	*68*	*2,035*
Central Utility Projects	**19,763**	**37,517**	**36,579**	**23,619**	**18,942**	**17,735**	**154,155**
Customer and Billing	*0*	*8,000*	*10,000*	*2,000*	*0*	*0*	*20,000*
Finance and IT Systems	*8,519*	*13,940*	*10,442*	*9,504*	*6,788*	*7,020*	*56,213*
Fleets and Facilities	*11,244*	*15,577*	*16,137*	*12,115*	*12,154*	*10,715*	*77,942*
Totals:	**260,670**	**282,294**	**257,566**	**246,110**	**229,384**	**238,493**	**1,514,517**